

Abstract of the Invention

The invention relates to a photo mask blank, a photo mask, a method and an apparatus for manufacturing of a photo mask blank in general and for manufacturing of a photo mask blank by particle beam sputtering in particular.

It is an object of the invention to provide a method of manufacturing a photo mask blank of high quality and high stability which is suitable for the production of a photo mask having small structures.

The invention proposes a method for manufacturing of a photo mask blank, wherein a substrate and a target are provided in a vacuum chamber. Said target is sputtered by irradiating with a first particle or ion beam and at least a first layer of a first material is deposited on said substrate by said sputtering of said target.